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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,603	03/23/2001	Mark Lynn Jensen	1327.009US1	6175

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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/29/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

AS7

Office Action Summary	Applicati n N .	Applicant(s)	
	09/816,603	JENSON, MARK LYNN	
	Examin r	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE f this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2003 .
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-42 is/are pending in the application.
- 4a) Of the above claim(s) 13,16,17,25-30,34-38 and 41 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11,12,14,15,18-20,32 and 33 is/are allowed.
- 6) ☒ Claim(s) 21-24, 31, 39-40, 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This communication is responsive to the amendment filed on 05/02/03. The applicant has overcome the 35 USC 112 rejection and the 35 USC 103 rejection for certain claims. However, the instant application is finally rejected as the 35 USC 103 rejection still stands for some claims.

Election/Restrictions

1. This application contains claims 13, 16-17, 25-30, 34-38 and 41 drawn to an invention nonelected with traverse in Paper No. 3a and 4. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 21-24, 31, 39-40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ovshinsky et al 5411592 in view of Bates et al 5338625.

The instant application is directed to system for making a thin-film device wherein the claimed inventive concept comprises the specific deposition means (station) that deposits the layers.

With respect to claims 21, 22, 31 and 42:

Ovshinsky et al disclose an apparatus for deposition of thin-film solid state batteries (title) comprising a multi-chambered deposition apparatus for depositing battery materials onto substrate material (abstract/col 6, lines 25-43). The apparatus includes at least three distinct evacuable deposition chambers, interconnected in series; the first deposition chamber is adapted to deposit a layer of battery electrode material onto the substrate (abstract/col 6, lines 25-43). The second deposition chamber is adapted to deposit a layer of electrolyte material onto the layer of the battery electrode material deposited in the first chamber. The third deposition chamber is adapted to deposit another layer of battery electrode material onto the electrolyte layer (abstract/col 6, lines 25-43). Initially, the substrate passes to the first deposition chamber then it is transported to the second chamber, next the substrate is passed through another gas gate into the third deposition chamber (col 11, lines 58 to col 12, line 7). *Thus, the process is continuous.*

Each electrochemical cell includes a thin-film negative electrode layer, a thin-film positive electrode layer and a thin-film electrolyte layer (col 9, lines 25-28). The chambers are specifically adapted to deposit battery materials onto the substrate (col 11, lines 50-58). *The energy conversion device is the battery itself which is being deposited over the substrate in the form of different layers.*

The deposition chambers are preferably adapted to deposit materials by at least one method selected from the group consisting of chemical vapor deposition, microwave plasma enhanced chemical vapor deposition, sputtering, laser ablation among them (col 7, lines 65 to col 8, line 3). *It is noted that sputtering and laser ablation are ion-assist energy deposition techniques.*

On the matter of claims 23 and 39:

Ovshinsky et al disclose that the substrate may be formed from an electrically conductive metal (rigid material) or from an electrically insulating polymer (col 9, lines 3-6). *Thus, the rolled substrate material is understood to be a continuous plastic sheet.* The use of an elongated web of substrate material is disclosed (col 13, lines 13-17).

With respect to claims 24 and 40:

It is disclosed that a second embodiment comprises a deposition apparatus for depositing single or multi-celled batteries upon precut substrates (wafers), that is a substrate which is of relatively limited length and width dimensions when compared to rolls of substrate web which can be as long as 2000 ft or more (col 12, lines 35-46).

Ovshinsky et al disclose an apparatus for deposition of thin-film batteries according to the foregoing. However, Ovshinsky et al do not expressly disclose the deposition station supplying the amount of ion-assist energy to aid in crystalline layer formation while controlling stoichiometry of the crystalline layer and the specific ion energy.

As to claims 21, 22:

Bates et al disclose a thin-film battery and method for making same wherein it is disclosed that the performance of the lithium battery is very dependent on formation of the cathode. Consideration of the microstructure of the cathode is equally important as consideration of the composition; typical is the use of cathodes having a characteristic crystalline microstructure which is dependent on the substrate temperature, extent of the erosion of the target material due to prior sputtering and the pressure and composition of the process gas during deposition (col 5, lines 25-34). At certain substrate temperatures, the battery cathodes consist of

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crystalline pellets while films deposited onto substrates consist of clusters of crystalline fibrous bundles (col 5, lines 35-39).

In view of these disclosures, it would have been obvious to one skilled in the art at the time the invention was made to use specific deposition station supplying the specific amount of ion-assist energy to aid in crystalline layer formation while controlling stoichiometry of the crystalline layer in the system of Ovshinsky et al as Bates et al disclose that that the performance of the lithium battery is very dependent on formation of the cathode wherein consideration of the microstructure of the cathode is equally important as consideration of the composition. It is typical to use cathodes having a characteristic crystalline microstructure which is dependent on the process substrate temperature, extent of the erosion of the target material due to prior sputtering and the pressure and composition of the process gas during deposition per se. Thus, those of ordinary skilled in the art can appreciate that by controlling and applying specific energy magnitudes onto the substrate material a crystalline substrate material formation is obtained, and thus, the performance of the battery is enhanced, and a cell of much higher capacity is also obtained. Further, since Bates et al also disclose that when deposited from an eroded target, the cathode films were characterized by a high density of micron-sized fibrous cluster of the specific crystalline compound, it would be obvious to recognize that specific ion-energy is to be applied thereon depending on the specific material composition and deposition techniques.

Allowable Subject Matter

4. The following is a statement of reasons for the indication of allowable subject matter: claims 11-12, 14-15, 18-20, 32-33 are allowable over the prior art of record as the prior art failed

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to reveal or fairly suggest what is instantly claimed, particularly: the first deposition station that deposits a second layer onto the first layer, wherein the first deposition station supplies an amount of ion-assist energy to the second layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate.

For example, Ovshinsky et al'592 and Bates et al'625 do not disclose this feature.

5. Claims 11-12, 14-15, 18-20, 32-33 are allowed.

Response to Arguments

6. Applicant's arguments filed 05/02/03, with respect to claims 21-24, 31, 39-40 and 42 have been fully considered but they are not persuasive. With regard to claim 21 and its dependent claims, the applicant contended that "claim 21 is a means-plus-function claim, which must be examined by reference to the structure recited in the specification and equivalent thereof under 35 USC 112, 6th paragraph". In that, the examiner asserts that the language of claim 21 does not appropriately meet the requirement to invoke the statute under the 35 USC 112, 6th paragraph because a claim limitation is interpreted to invoke such statute if it meets the following 3-prong analysis (SEE MPEP 2181): a) the claim limitations must use the phrase "means for"; b) the "means for" must be modified by functional language; and c) the phrase "means for" must not be modified by sufficient structure, material or acts for achieving the specified function. Accordingly, the means-plus-function language of claim 21 (*i.e. means for depositing a second layer onto the first layers, wherein the means supplies energy to the second layer to aid in layer formation without substantially heating the substrate*), appears to be

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sufficiently modified, and thus, it does not meet the requisite degree so as to be considered to invoke 35 USC 112, 6th paragraph.

7. With respect to claim 22 and its dependent claims, the applicant contended that the prior art of record failed to show a reference “wherein the first and second deposition stations each supply energy to the layer to aid in crystalline layer formation while controlling a stoichiometry of the respective crystalline layers without substantially heating the substrate”. In this regard, the examiner points out that, as admitted by the applicant, “various sources of assist energy act to treat the surface for better crystal orientation”, accordingly, in this case and in light of and consistent with the recited claim language, the phrase “wherein the first and the second deposition stations each supply energy” in claim 22 has been given its broadest reasonable interpretation. For that reason, it is further stated that the prior art’s energy supply feature does satisfy the metes and bounds as instantly recited in claim 22.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326.

The examiner can normally be reached on Monday-Thursday (8:30 am - 7:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary examiner, Steve Kalafut can be reached on (703) 308-0433. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Raymond Alejandro
Examiner
Art Unit 1745


STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP
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